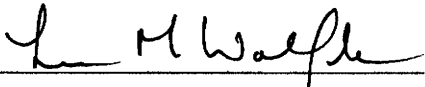


THE EMPLOYMENT CONSEQUENCES OF SECONDARY OCCUPATIONAL AND
ACADEMIC COURSES FOR MINORITIES AND FEMALES

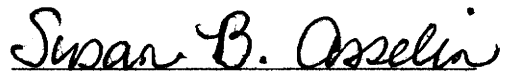
by
Antigo Delores Martin

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(Emphasis in Vocational School Psychology)

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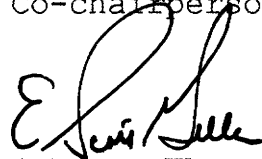
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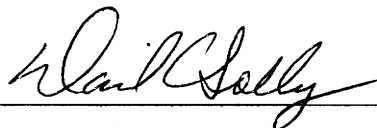
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by

Antigo Delores Martin

Lee Wolfle and Susan Asselin, Co-chairpersons

Counseling and Student Personnel Services
(Emphasis in Vocational School Psychology)

(ABSTRACT)

The purpose of this study was to determine the long-term effect of participation in secondary vocational education and Co-operative Education for non-college attending high school graduates in general, and selected ethnic minorities and females specifically. Minority individuals represented in the study were African-American and Hispanic-American high school graduates from the 1980 sophomore cohort of the High School and Beyond, Fourth Follow-up. While previous research has purported to show that secondary vocational education has short-term economic benefit for non-college attending youth, these benefits have been mixed and/or nonexistent for minority youth. Few studies have examined the long-term benefit of participation in vocational education during high school.

Path analysis was used to examine the long-term direct and indirect effects of secondary vocational education on the post secondary labor market experiences of non-college attending females and selected minorities. A causal model was devised to determine the influence of taking vocational education courses and participation in Co-op during high school on length of employment and annual income for young people entering the labor force with only a high school diploma.

For non-college attending youth, these analyses found no long-term effect on their post graduation labor market experiences as a result of taking secondary vocational education courses and/or participating in Co-op during high school.

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Last but not least, I'm grateful to my family, whose patience and love strengthened me during those times when the world threatened to overtake me and I wanted to throw in the towel. This work is as much yours as mine, thank you.

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CHAPTER ONE

INTRODUCTION AND STATEMENT OF THE PROBLEM

In the 1980s, the school reform movement was focused primarily on improving the academic skills of students, with the implicit assumption that most high school students continue their formal education after graduation. Yet, data indicates that about half of all America's youth do not go to college (William T. Grant Foundation, 1988a; U.S. GAO, August, 1991; U.S. GAO, September, 1993; Fraser & Charner, 1993). It is the movement of these non-college attending high school graduates into the labor market that this study sought to examine. Specifically, this study attempted to determine if participation in various high school curricula lead to different post-secondary labor market experiences for these non-college attending youth.

It is a relatively recent phenomenon that educators and politicians have grudgingly acknowledged the shortcomings in secondary education that affect all students, including non-college attending youth. Currently, when educators, politicians and/or the popular press talk about educational reform, the buzzword is "transition"--specifically, "school-to-work transition".

For most people, school-to-work transition symbolizes a direct route all youth follow when leaving school and entering the work force. The reality is that the move from the classroom to the workplace is not a single event, but an extended process which may be composed of variations reflecting the changing needs of young people in society today (Fraser & Charner, 1993; Smith & Rojewski, 1993).

The United States does not have a formal school-to-work transition system. Some researchers have described the current state of transition in this country as a "do-it-yourself" system (Bryne, Constant, & Moore, 1992). In fact, it has long been assumed that the vast majority of young people in this country are perfectly capable of negotiating the path from school to work on their own; they successfully find work and are eventually absorbed into the full-time work force. The realities are sometimes quite different.

How does the current state of transition services affect America's youth? In general, uncoordinated, fragmented service delivery has lessened the effectiveness of the services provided (Smith & Rojewski, 1993). While many of the components needed are in place, they do not provide high school students with a smooth systematic process for going from secondary education to employment.

One direct consequence of not having a formal school-to-work transition system has been that young people who graduate from high school, but do not go directly to college, cost society socially and economically. Many go from one low-paying job to the next until their mid-20s (Smith & Rojewski, 1993). The result for some has been a life of employment that pays less than a living wage, offering neither self-respect nor a chance for upward mobility (Grant Foundation, 1988a).

More remarkable has been data indicating that 20% of these non-college attending youth will be unemployed six years after graduating from high school (Institute on Education and the Economy [IEE], 1992). Should these high school graduates remain in the ranks of the unemployed, they will cost society an estimated \$50,000 each year for food, housing, health care, welfare benefits or prison care (Fraser & Charner, 1993).

Even though no formal school-to-work system exists in this country, an informal system within secondary education has been assumed--that system being vocational education. Secondary vocational education in the United States gained its impetus with the passage of the Vocational Education Act of 1963. Under this legislation, federal funds were granted

to persons of all ages and levels of schooling for training in any occupational area which did not require four years of college. Under the Vocational Education Act and its subsequent amendments, including the Carl D. Perkins Vocational and Applied Technology Act of 1990 (U.S. Printing Office, 1991) the term "vocational education" has been defined as

...organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree. Such programs shall include competency based applied learning which contributes to an individual's academic knowledge, higher order reasoning, and problem-solving skills, work attitudes, general employability skills, and the occupational-specific skills necessary for economic independence as a productive and contributing member of society. Such term also includes applied technology education. (Pub. L.No. 98-524, 20 U.S.C. 2471)

The term vocational education has been used throughout this paper to refer to a broad array of occupational courses

available to and taken by high school students within any secondary vocational education curriculum.

Although vocational education serves a variety of educational purposes, it has long been the prevailing view of many--including students and parents-- that its main purpose is to provide high school students with job skills that enable them to obtain jobs they would not otherwise get without additional training. Armed with this perception, each year thousands of students enroll and complete high school vocational education with the expectation of successfully competing in the job market once they leave school. For many, secondary vocational programs have been the only educational components that attempt to link school with adult life. According to John Goodlad (1984),

General education is the best preparation for effective individual functioning and responsible citizenship...[However], vocational education, including guided work experience, is essential, not merely an effective part of general education....The issue is what kind of education contributes most to economic competence and satisfaction in work and life. (Pp. 147-148)

Thus, vocational education has been viewed as providing the explicit preparation for school-to-work transition currently needed and used by all students.

Several researchers have found that ethnic minorities and low SES students are generally over represented within the high school vocational curriculum (Kershaw, 1992). This overrepresentation has occurred because within the educational community, ethnic minorities, women and low SES youth have been perceived as less capable academically than their peers from middle and upper incomes. Due to this perception, for years vocational education has been regarded as the curriculum of choice for students who are not suited for a high school curriculum of academic, college oriented courses (Fraser, Hubbard, Charner & Weinbaum, 1993). The question is whether this preparation is adequate for all non-college attending youth. More importantly, does vocational education provide an adequate school-to-work transition system for certain minority, female, and low SES sub-groups of the non-college attending population?

The sections that follow provide an overview of what we know and do not know about various minority, female and low SES, non-college attending youth: their post graduation labor market experiences; their secondary education

participation patterns, and their work activity patterns during school.

What Is Known About Non-college Attending Youth

While reforms in education have been successful in improving educational attainment for all young people, with substantial attainment increases seen for African-Americans and Hispanic-Americans, it is estimated that approximately 20 million high school students are unlikely to continue their formal education once they leave high school (Grant Foundation, 1988a). The recent attention to non-college attending youth stems from changes in the economy and concern for the economic well-being of many young people.

Young people attempting to enter the work force with only a high school diploma have been hit particularly hard by the results of workplace restructuring within the labor market. In fact, transition from school to work is the crisis point of the employment problems encountered by non-college attending youth.

In late 1980s and early 1990s fewer and fewer high school graduates have been able to obtain full-time employment. The 1992 unemployment statistics for high school graduates were reported at 11.8% for females, 19.9% for

Hispanic-Americans, and 38.9% for African-Americans (U.S. Bureau of Labor Statistics, 1993). Furthermore, Fraser and Charner (1993) indicated that these dismal unemployment rates remain constant up to five years after graduation. Within the non-college attending population, long term unemployment and joblessness continues to be concentrated among a significant proportion of America's poor and minority youth (Freeman & Wise, 1982).

For those high school graduates who have been fortunate enough to gain employment, many hold low-skill service jobs paying little more than minimum wage and providing little or no chance for advancement. Currently, one-fifth of families headed by high school graduates lives in poverty (Fraser & Charner, 1993).

For this nation's non-college attending youth these have been devastating developments. The continuing deterioration of earning potential for millions is leading to a "permanent underclass" composed primarily of ethnic minorities, women and low SES persons who do not continue their education beyond high school (Jennings, 1991).

Given the hurdles non-college attending youth face in their search for economically viable careers, does taking vocational courses during high school improve their chances

of being gainfully employed after graduation? Supporters of secondary vocational education have claimed that this curriculum provides students with skills and work attitudes necessary for successful careers. Yet, the direct and indirect economic benefits of taking vocational education have been difficult to determine.

Of the many studies examining whether vocational education is beneficial, several found that students who take vocational education during high school had more continuous labor force participation than other high school graduates (Meyer, 1981b; Wirt, 1991). Another study found that high school graduates who did not attend college, but took two or more vocational courses during high school, had higher hourly earnings, fewer months of unemployment, and greater annual incomes than did high school students who took fewer than two vocational courses (Kang & Bishop, 1986). Similar findings were reported by the National Assessment of Vocational Education (NAVE) committee (Boesel & McFarland, 1994).

In contrast, Desy, Campbell and Gardner (1984) determined that males who took two or more vocational courses during high school earned up to 10% less per hour than their peers with no vocational credit. In contrast,

females with two or more high school vocational courses had higher hourly earnings than their peers who took no vocational courses. When annual income was examined, this trend reversed and advantages were seen for males with high school vocational course credits.

In general, the labor market benefits cited for high school vocational education graduates have been small, unreliable or nonexistent (Campbell, Basinger, Dauner & Park, 1986; Kang & Bishop, 1986; Meyer, 1981b). For certain subgroups of the non-college attending population--ethnic minorities, women, and low socioeconomic status (SES) youth --who have typically experienced significant difficulties in the labor market, empirical data on the economic benefit of high school vocational education has been largely nonexistent.

Of the many studies examining the post graduation labor market success of vocationally tracked ethnic minorities and women, Campbell et al. (1986) found no clear payoff in hourly and weekly earnings for women who pursued a secondary vocational track. The benefit of high school vocational education for African-Americans and Hispanic-Americans was likewise lacking empirical support. Although labor force participation was found to have been more continuous for

most high school students taking vocational courses, African-Americans had less continuous labor force participation, while females of all ethnic groups had lower participation rates than white males (Campbell et al., 1986).

While these data are assumed to reflect the overall labor market experiences of most non-college attending youth, one might be left with the impression that non-college attending young people never participate in the work force prior to graduation. Yet, available data indicated that a sizable portion (40 to 60 percent) of all students work during high school (Fraser & Charner, 1993).

Work experience for students takes two forms: school organized work experiences and naturally occurring part-time jobs that students obtain on their own. What are the consequences of working during school on subsequent employment and earnings?

Several studies have reported that early work experiences enhance employability and earnings following high school (Steel, 1991; Stephenson, 1979; Stern & Nakata, 1985). Definitive data on how different early work experiences across varying levels of vocational education participation affects the post graduation labor market

success of non-college attending minority and low SES youth was not available.

While the implication is that there should be some way to tie these naturally occurring work experiences with secondary education, no one is responsible for the movement of high school students into these early work experiences which they arrange for themselves. Accepting the fact that students will continue to work during high school, it would appear that we need to aid them in capitalizing on these early work experiences if a link between what they do at work and what they do in school is to be made.

What Is Not Known About Non-college Attending Youth

As educators continue to experiment with various solutions to remedy the school-to-work dilemma non-college attending youth experience, questions remain.

1. Since studies which have examined the post-graduation labor market benefits of secondary vocational education for non-college attending youth in general, and ethnic minority and female subgroups in particular, have been ambiguous in their findings, how much or how little vocational course work is beneficial?

2. Given that early work experiences during high school enhances post-graduation employability, do different types of work experiences (i.e., school organized versus self obtained) produce similar labor market experiences for non-college attending youth after graduation?

The present study sought to determine the extent to which participation in secondary vocational education and working during high school resulted in significant economic benefit for selected ethnic minority, female, and low SES youth after graduation. Longitudinal data from the High School and Beyond (HS&B) study provided data for the causal modeling analysis conducted.

Limitations of Present Study

This study had several limitations. First, HS&B was not designed specifically for the purpose of this study. The HS&B data is a large-scale longitudinal survey, with a primary goal of observing the educational and occupational plans and activities of young people as they move through the educational system and exit into the adult world. The HS&B study seeks to provide information for the reformulating of educational policies which affect the transition of youth from school to work (Jones, Sebring &

Campbell, 1986). However, data within HS&B did help in evaluating the effectiveness of secondary vocational education for non-college attending youth seeking to enter the labor market. Secondly, sample size did not permit stratification by each ethnic minority subgroup in the non-college attending population. The analysis was most complete for females, African-Americans, and Hispanic-Americans. Thirdly, no attempt was made to subdivide the vocational courses taken by subjects in this study into specific occupational groupings. While Johnson, Dupuis, Musial and Hall (1994) indicated that secondary vocational education curriculum can be divided into five types of general vocational programs and four types of occupational specific programs, these programs and course offerings vary greatly from school district to school district. Therefore, analyzes within this study were based on course credits earned by study participates across the secondary vocational education curriculum.

Study Questions

This study reported the direct and indirect effects of secondary vocational and academic course work on the labor market experiences of non-college attending high school graduates. The following questions were examined:

1. Are the long-term post secondary labor market experiences of non-college attending youth, in general, and females and selected ethnic minorities in particular, who participated in secondary vocational education different from members of these subgroups who participated in other high school curricula?
2. What effect does participation in Co-op during high school have on earning and employment, long-term, for females and selected ethnic minorities who enter the labor force with only a high school diploma?
3. Does participation in secondary vocational education in conjunction with Co-op experience have a long-term effect on the post-secondary labor market experiences of non-college attending females and selected minority individuals?

CHAPTER TWO

REVIEW OF SELECTED LITERATURE

It has been estimated that approximately 20 million high school students are unlikely to continue their formal education once they leave high school (Fraser & Charner, 1993; Grant Foundation, 1988a; U.S. GAO, August 1991). Each year thousands of these young people enroll and complete high school vocational education courses with the expectation of successfully competing in the labor market once they graduate. Yet labor market statistics continue to suggest that our secondary schools have not been very successful in building a bridge that effectively takes America's secondary students from the world of school to the world of work. For certain non-college attending subgroups of this population--ethnic minorities, women, and low socioeconomic status (SES) youth--who typically experience significant difficulties in the labor market, empirical data on the post secondary economic benefit of high school vocational education has been difficult to determine. It is these minority and low SES subgroups of non-college attending youth who are the focus of the present study.

The following demographic information is provided to lend support for the examination of labor market outcomes of these particular youth who participate in secondary vocational programs.

Demographic Profiles for African-Americans and Hispanic-Americans

According to the Grant Foundation (1988b), the number of American youth from minority backgrounds and/or low SES homes will comprise "a significantly larger percentage of the youth population in the next two decades" (p. 10). Others have noted that the rapid growth of this country's minorities should be of particular interest to secondary vocational educators since many minorities do not do well in traditional academic high schools (Campbell, et al., 1986; Jennings, 1991). This means that vocational education may become increasingly more important in addressing the school-to-work transition needs of these students who are not going to college.

The following subsections present relevant demographic data for the three non-college attending subgroups who are the focus of this study.

African-Americans. African-Americans, as a subgroups of the general population is the largest ethnic minority in the

United States. In 1987, this group comprised 12.3% of the nation's population (Information Plus, 1988). By 1990, African-Americans comprised 12.1% of the nation's population (U.S. Bureau of the Census, October, 1992). While a decline in the growth rate for this ethnic minority is predicted, Wetzel (1987) suggested that the proportion of African-American youth in the total youth population will increase from 13.7% in 1980 to 15.2% in 1996.

In general, the largest concentration of African-Americans (58.5%) live in the South, while 11% live in the Northeast, 9.6% live in the Midwest, and 5.3% live in the West (U.S. Bureau of the Census, October, 1992). These regional distributions are not expected to change significantly by the year 2000.

Hispanic-Americans. The Hispanic-American population is divided primarily into three subgroups: Mexican-Americans, Puerto Ricans, and Cubans and comprises 9% of the population (U.S. Bureau of the Census, November, 1992). It is projected that increased immigration and a rising birth rate will result in an increased proportion of Hispanic-American youth in society; growing to approximately 13% by 1996. By the year 2000, this ethnic minority is

expected to be the largest single minority in the United States (Grant Foundation, 1988b).

Hispanic-Americans live in all regions of the country. However Puerto Ricans and Cubans tend not to migrate throughout the country. Approximately than 90% of all Puerto Rican's live on the island of Puerto Rico and more than 50% of all Cubans reside in Florida (Information Plus, 1988). For the remaining Hispanic-American population, 21.3% live in the West, 7.9% live in the South, 7.4% live in the Northeast, and 2.9% live in the Midwest (U.S. Bureau of the Census, November, 1992).

Socioeconomic status of non-college attending youth. In 1990, 15.9% of all Americans were living at or below the poverty level (U.S. GAO, 1993). A family of four is considered poor if their annual earnings fall below \$12, 674 without noncash benefits such as food stamps, subsidized housing and Medicaid coverage(U.S. Bureau of Labor Statistics, 1993; U.S. GAO, August, 1993).

In 1986 the number of persons below the poverty level was 10.9% and of these, 18.3% lived in rural areas of this country (U.S. Bureau of the Census, 1986). Inner city poverty rates have risen more dramatically. In 1985, it was estimated that 7.8 million individuals (30%) in the inner

cities lived at or below the poverty level (Wilson, 1987; Wilson, Aponte, Kirschenman & Wacquant, 1987).

By the 1990's these rates had not changed substantially. For young adults, ages 18-24 the poverty rate was 19.36%. For persons completing only high school, 22.9% live below the poverty level (U.S. Bureau of the Census, October, 1992). When ethnicity is considered the poverty rate for whites was 10.14%; for African-Americans the rate was 29.5%, and for Hispanic-Americans the rate was 31.15% (U.S. Bureau of the Census, November, 1992).

Whether one is white, African-American or Hispanic-American, the realities of poverty are harsh. If basic changes in the school-to-work transition process are not made real wages will continue to fall, increasing the likelihood that a majority of non-college attending youth will join the permanent underclass in society (National Center on Education and the Economy, June, 1990).

Given that labor market success is closely correlated with schooling, is high school vocational education the best secondary curriculum option for at-risk, non-college attending individuals? To answer this question several issues must be discussed as they relate to non-college attending youth. In the sections that follow, a closer look

at secondary education participation patterns is provided and the relationship between varying high school education tracks and post secondary labor market outcomes is examined.

Secondary Curriculum Participation

Secondary education in the United States is a multiple track system. In general, the best and brightest are advised into the college prep curriculum. This leaves the remaining student population to haphazardly move through the secondary educational system in either the general curriculum or a vocational curriculum (U.S. GAO, September 1993). Recently, Wirt (1991) indicated that a more accurate description of high school participation showed that rather than a three track system, there appeared to be primarily only two tracks. It was reported that only 29% of all high school students are matriculating in order to attend institutions of higher education. The remaining students (71%) appeared to take a variety of courses during their high school enrollment (Wirt, 1991). The NAVE committee found that more than 97% of all students take at least one vocational course during high school (Boesel & McFarland, 1994). It would seem, based on these data, that the common perception of distinctive general and vocational curriculum tracks in

American public high schools may be unsupported by empirical evidence.

Given that all students, not just students in the vocational curriculum take vocational courses, what is known about the secondary education participation patterns of the minority, non-college attending youth who are the focus of this study?

Several researchers found that differentiated curricula participation are related to race, ethnicity and social class (Oaks, Selvin, Karloy & Guiton, 1992). Minority and low SES students are generally advised to take fewer college prep courses during high school (Edelman & Howe, 1985; Kershaw, 1992). One explanation for this trend has been that, generally, minority and low SES youth are viewed as having less academic ability than their peers from middle and upper income families. One result of this perception has been the disproportionate over representation of poor and ethnic minorities in non-college prep tracks during high school (Kershaw, 1992).

This over representation of certain subgroups of the secondary student population within the non-college attending track appeared to have had several adverse effects. The most dramatic effect has been that minority

enrollment in post secondary education has leveled off. Data suggested that total post secondary enrollment of minorities, especially African-Americans, has changed little since about 1975. Although the rate of high school completion for African-Americans has continued to increase, corresponding increases in post secondary enrollment have not been realized (Koretz, 1990).

Secondly, because minorities are less likely to continue their education beyond high school, opportunity for increased economic success after high school and for upward social mobility has declined, resulting in a growing "permanent underclass" of minority youth in our country (Franklin & Resnick, 1973; Fraser & Charner, 1993; Jennings, 1991; Kershaw, 1992; U.S. GAO, August 1993; Webster, 1974).

Given the fact that most students are not college attending and a large proportion of minority and low SES, non-college attending youth are advised to take vocational courses, attention must now turn to an examination of secondary vocational education participation and how participation in this curriculum effects post graduation success in the labor market.

Secondary Vocational Education Participation

Accurate, reliable data on secondary vocational education participation patterns was not available. The U.S. GAO (1989) reported that no vocational enrollment data for the 1984-85 school year was available and only partial data was available for subsequent years. Difficulty in data collection was reported to be directly related to the number of substantially differing definitions of a "vocational education student" that exist. As educational reformers and the tax paying public demand reliable evidence concerning the effectiveness of educational programs reportedly designed to prepare young people for the work force (i.e., vocational education) many researchers have indicated that a single descriptive term may not be adequate. A single descriptive definition of who is and who is not a secondary vocational education student may fail to reflect the breadth of enrollment in current secondary vocational curricula (Catterall & Stern, 1986; Desy et al., 1984; Meyer, 1981a; Wirt, 1991). Any discussion of vocational education and its role in school-to-work transition must include a brief look at various categorization systems that have been used to examine the post-graduation benefits of vocational education courses. Several methods for describing vocational education participation are presented in the next section.

Categorizing vocational education participation. One researcher delineated secondary vocational education participation in terms of a three level categorizing system (Meyer, 1981a). Under the Meyer method students were grouped based on the percentage of actual vocational course work taken: Low participants take 0-15% of their high school courses within the vocational curriculum; Medium participants have 16-35% of their courses in the vocational area, and High participants complete at least 36% or more of their course work in vocational courses (Meyer, 1981a).

In contrast, other researchers have suggested a five level classification system. Using this method, Concentrators have six or more vocational education credits in a specialty area and average three years of course work in their specialty; Limited Concentrators have at least three credits in a vocational area and they tend to take more courses outside of their specialty; the Concentrator/Explorer averages two vocational courses, taking no specialty courses in the twelfth grade; Explorers take courses in at least three vocational service areas without specializing, and students described as Incidental/Personal take no more than one vocational course

during high school (Campbell and Basinger, 1985; Campbell, Orth & Seitz, 1981, 1982; Desy et al., 1984).

Regardless of the categorization system used, most researchers agree that the pathways for completing high school and entering the work force has changed. The routes high school students currently take in completing their secondary education encompasses a series of variations that reflect the needs and conditions of young people in society (Fraser & Charner, 1993). Which paths are best in preparing students for the labor market remains unclear. In the next section information about the post secondary labor experiences of minority and female, non-college attending youth is presented.

Post Secondary Labor Market Experiences of Non-college Attending Youth

In recent years fewer and fewer non-college high school graduates have been able to obtain full-time employment. In 1986, it was estimated that less than 49% of male high school graduates and 42% of female high school graduates were working full-time two years after graduation (Grant Foundation, 1988a; U.S. Bureau of the Census, 1987). Furthermore, Fraser and Charner (1993) indicated that these dismal employment rates remain constant up to five years

after graduation. The labor market statistics that follow reveals the magnitude of the problems faced by minority and female, non-college attending youth transitioning from school to work without continuing their formal education beyond high school.

High School Graduates In The Labor Force

In 1986, the work force participation rate for persons with high school diplomas was 82.7% (U.S. Bureau of Labor Statistics, 1986a, 1986b). When gender differences in employment rates were examined, the participation rate for males was 89.7%, whereas the rate for females was 76.1% (U.S. Bureau of Labor Statistics, 1986a, 1986b). Based on these data, it appeared that, for females, the transition from high school to full-time employment has been more difficulty than for their male peers.

When the 1986 overall unemployment rate of 6.1% was compared to the unemployment rate for high school graduates, a significant disparity was evident. According to data reported by the federal government, persons attempting to enter the labor market with only a high school diploma were twice as likely to be unemployed (11.5%) as the general population (U.S. Bureau of Labor Statistics, 1986a, 1986b).

Recent labor statistics indicated that little has changed in the last seven years for non-college attending youth attempting to enter the work force. In 1992 the unemployment rate for persons 16 years old and older was 7.3%, while during the same period the unemployment rate for high school graduates was 11.6% (U.S. Bureau of Labor Statistics, 1993). Gender inequities also continued, with male high school graduates employed at a rate of 87.5% and females employed at a rate of 71.6% (U.S. Bureau of Labor Statistics, 1993).

African-American high school graduates in the labor force. In 1986 the labor force participation rate for African-American high school graduates was 74.9% (U.S. Bureau of Labor Statistics, 1986a). A slight gender difference in the participation rate for this subgroup of the high school graduate population was indicated; males participated in the work force at a rate of 69.4%, whereas females were employed at a rate of 54.2% (U.S. Bureau of Labor Statistics, 1986b). What these statistics failed to reflect was the massive unemployment among African-American high school graduates.

When the 1986 unemployment rate for African-Americans completing high school was considered, data indicated that

these individuals' unemployment rate was twice that of all high school graduates and three times that of white high school graduates. Specifically, the unemployment rate was 11.5% for all high school graduates, 9.0% for white high school graduates, and 27.9% for African-American high school graduates (U.S. Bureau of Labor Statistics, 1986a, 1986b).

Unemployment data for 1992 revealed an ever widening gap of unemployment between African-American and white high school graduates. In 1992, the unemployment rate was 11.6% for all high school graduates, 15.6% for whites completing high school, and 38.9% for African-Americans with the same educational attainment (U.S. Bureau of Labor Statistics, 1993).

Hispanic-American high school graduates in the labor force. In 1986, 77.9% of all Hispanic high school graduates participated in the labor force (U.S. Bureau of Labor Statistics, 1986a, 1986b). In general, this rate was comparable to that of African-Americans. Gender differences in work force participation rates was again found. Hispanic males were employed at a rate of 78.8% and females employed at a rate of 54.2% (U.S. Bureau of Labor Statistics, 1986a, 1986b).

Although Hispanic-Americans who completed high school were less likely to be unemployed than African-Americans, their unemployment rate (16.9%) was higher than white high school graduates (U.S. Bureau of Labor Statistics, 1986). Like the unemployment rate for African-American high school graduates, the jobless rate for Hispanic-Americans completing high school has increased since 1986. Recently, the unemployment rate cited for this subgroup of the population ranged from 17% to 19.9% (Fraser et al., 1993; U.S. Bureau of Labor Statistics, 1993).

For non-college attending minorities these are devastating statistics, yet labor participation rates do not tell the entire story for this segment of America's youth. To fully grasp the harsh economic realities faced by non-college attending youth, the post graduation earnings for high school graduates who gain employment must be considered.

Earnings For High School Graduates In The Labor Force

Despite increased employment over the last decade, non-college attending minorities and females are still less likely than white male high school graduates to hold professional, managerial, and technical positions in the labor force. According to Hamilton and Powers (1990) most

non-college attending youth continued to be employed in low paying positions similar to those they held during high school. Although many high school graduates reduce the time they spend unemployed by continuing to hold the same job they held while in school, these jobs seldom pay enough to make these high school graduates financially independent and upwardly mobile in terms of careers.

In 1992 the median annual income for all households was \$30, 786, with males earning \$26, 472 and females earning \$16, 227 (U.S. Bureau of the Census, 1993). When earned income was examined relative to educational attainment, individuals completing only high school earned considerably less. Male and female high school graduates earned \$22, 765 and \$13, 266 respectively (U.S. Bureau of the Census, 1993).

African-Americans and Hispanic-Americans continued to be concentrated in low paying, low skilled jobs. In general, only 15% of African-American high school graduates and 11% of Hispanic-American's graduating from high school held managerial or technical positions (U.S. Bureau of Labor Statistics, 1986a, 1986b). The employment patterns for these minority subgroups has resulted in earned incomes significantly below that of their white peers.

Recently, earned income for African-American males and females, who attain only a high school diploma, was reported to be \$16, 588 and \$12, 762 respectively. For Hispanic-American high school graduates, males earned \$18, 951 and females earned \$12, 710 (U.S. Bureau of the Census, 1993).

These data indicated that, for many high school graduates, being employed does not guarantee net incomes above the poverty level. In fact, one in five households headed by high school graduates live in poverty (Fraser & Charner, 1993). Whether one is African-American, Hispanic-American, white, male or female, the realities of poverty are harsh. Long-term unemployment and underemployment continues to be the plight among a significant portion of America's non-college attending minority and female youth. These trends lend support for a closer examination of the link between secondary vocational education, in particular, and transition into the work force for minority youth who end their formal education with high school graduation.

Post Secondary Economic Effects Of Vocational Education

During the last decade numerous studies have analyzed the labor market effects of high school vocational education. Although these studies did not specifically address all minority subgroups found in the population, most

studies have included African-Americans, Hispanic-Americans, and women. Much of the traditional research on the economic outcome of vocational education has compared the self-reported hourly, weekly, or annual earnings and employment rates of vocational students with their peers in the general curriculum.

In two studies, when graduates of vocational and general curricula were compared, it was found that unemployment rates for these individuals was influenced more by maturation and the business cycle than school curriculum (Grasso & Shea, 1979; Meyer, 1981b).

Other researchers examining the economic value of high school vocational education have found a large economic benefit for women and a much smaller and often negative payoff for men (Desy et al., 1984; Grasso & Shea, 1979; Gustman & Steinmeier, 1981; Rumberger & Daymont, 1982). All these studies examined the National Longitudinal Survey of Labor Market Experience-Youth Cohort and appeared to support the earlier findings of Meyer.

Campbell et al. (1986) examined the economic impact of vocational education using data from the High School and Beyond (HS&B) survey to determine whether membership in specific minority groups affected post graduation labor

market success. Campbell and colleagues(1986) found no clear payoff in hourly and weekly earnings for women who pursued a vocational track in high school. The benefit of high school vocational tracks for African-Americans and Hispanic Americans was likewise virtually nonexistent. Although labor force participation was found to have been more continuous for vocational track graduates than for students in other curricula, African-Americans had less continuous labor force participation while females of all ethnic backgrounds had lower participation rates than white males (Campbell et al., 1986).

It was noted that when Campbell and his colleagues conducted the 1986 study, the HS&B data related to a very narrow age range of youth, none of whom had been out of high school more than two years.

While most of the early research focused upon the short term effects (generally less than four years after graduation) of high school vocational education, Mertens and Gardner used a different approach; examining the effects of vocational education 15 years after graduation. Results from this longitudinal study suggested that secondary vocational programs were effective in reducing unemployment

rates for their graduates, yet earning advantages diminished over time (Mertens & Gardner, 1983).

In a 1986 longitudinal study, the California subsample of the 1980 and 1982 HS&B survey was examined. Findings indicated that high school graduates who had participated in vocational education had an unemployment rate 19% lower than their general education tracked peers (Catterall & Stern, 1986). The weekly earnings of this subsample were also scrutinized. Results revealed that for men (regardless of ethnicity) and white and Hispanic-American women, vocational education participation raised their earnings, while for African-American women the effects appeared to be unambiguously negative (Catterall & Stern, 1986).

Collectively these previously cited studies provided an ambiguous picture of the post graduation economic impact of secondary vocational education participation for non-college attending youth in general, and ethnic minorities and women in particular.

General economic effects of varying patterns of vocational education participation. While reliable data on secondary vocational education participation was not found, several researchers have examined how high school graduates

who participated in secondary vocational education fared in the labor market.

Campbell, Gardner and Seitz (1982) used a previously mentioned five level classification system and the identical data examined by Meyer in his 1981 study to determine the extent to which vocational education graduates were active in the work force. They found, in general, that individuals classified as Concentrators in vocational education were more likely to be employed for a full year than those who had taken no vocational courses. Males identified as Limited Concentrators were also more likely to be employed all year, however this trend was somewhat weak. For females described as Concentrators the full year employment trend was the strongest; they were more likely to be in the labor force continuously than other high school graduates.

This five level classification system was applied by Campbell et al. (1986) in a study which examined the labor market outcomes of secondary vocational education. This study reported that white females earned from 8-28% less than white males. Furthermore, it was found that gender differentials of approximately 10% prevailed among Hispanic-Americans, African-Americans, and low SES individuals of all races.

In terms of ethnicity and gender, white males from vocational curricula and white and African-American females, from the commercial specialty area within vocational education, experienced less unemployment than their peers in the general education track (Grasso & Shea, 1979).

These findings were confirmed by Meyer (1981b) noting that high school vocational education provided women with skills valued in the labor market and as a result they gained substantially from participation in the commercial specialty area. Men were found to experience only modest gains as a result of participation in the trade and industrial arts specialty area within vocational education.

In another study, Desy et al. (1984) reported that male high school graduates with "substantial" vocational education participation, earned an average of 10% less per hour than their non-vocational tracked peers. When annual income was examined however, men with vocational concentrations reported higher annual incomes. Women showed higher earnings than their non-vocational peers; annual income was also higher.

In contrast, Gustman and Steinmeier's (1981) analysis of the identical data indicated that vocational education, specifically business and commercial training, had much less

of an economic impact for women. These researchers further suggested that the lack of some measurable economic impact for vocationally educated males may have resulted because no useful skills were developed or because supply adjustments eliminated any earning advantage.

Finally, Rumberger and Daymont (1982) found no evidence of significant, positive earning effects for men with vocational concentrations, but did find significant earning advantages for minority women. These findings were similar to those reported by Meyer (1981b) and Grasso and Shea (1979).

All the studies cited revealed that secondary vocational education was significantly related to post graduation labor market outcomes. Specifically, some gains were noted in weekly earnings and length of labor force participation, yet the economic benefit of varying levels of secondary vocational education participation for minority and low SES, non-college attending youth remained unclear.

When researchers have examined the economic impact of secondary vocational education, they have controlled for several factors, including SES, rural verses urban residence, and student ability. One factor most of these researchers did not control for was work experience prior

to graduation. Desy et al. (1984) reported that high school work experience had an effect on post graduation earnings. If this is true, what is known about the work activities of high school students? What is the nature of this work experience? And how does this work experience in conjunction with varying levels of vocational education participation affect post secondary employment and earning patterns? These issues are examined next.

High School Students and Work

Since 1964 the number of young people who work while in high school has been growing steadily (Charner & Fraser, 1987). Recently it was estimated that 40 to 60 percent of all high school students work while going to school (Charner, 1990; Charner & Fraser, 1987; Fraser & Charner, 1993). Furthermore, by the time they are seniors, 90% of all high school students have worked (Charner & Fraser, 1987).

The reasons why American teenagers work vary. Some seek employment for spending money or to help support their families. Others work because they prefer working to attending school. Still other teenagers work to learn job skills. These reasons for working while in school have not changed significantly since the 1920's (Charner, 1990). Many researchers reported that the trend of working while in

school is here to stay.

Although there exist a general consensus that all high school students benefit from form of career oriented/vocational education and work experience, recent literature reported that there appeared to be little connection between the type of work these students performed and their school curriculum (Charner, 1990; Charner & Fraser, 1987; Fraser et al., 1993).

Currently, work experience gained during high school takes two forms: organized, school related work programs (e.g. Cooperative Education) and part-time, non-school related work experiences students obtain on their own. The sections which follow focus on what is known and what is not known about student work experiences while in school. For purposes of this review I have examined three areas related to youth and work: (a) Work participation patterns of high school students; (b) the nature of high school work experiences; and (c) post graduation effects of working during high school on employment and earnings.

Work Patterns During High school

Although information on the work activities of high school students has not been systematically collected, there was some information available to provide a broad picture of

the patterns of work experiences for different subgroups of the high school population.

Ethnicity. In most studies which examined participation in work activities for high school students, white students were more likely to work than minority youth (Charner & Fraser, 1987). Lewin-Epstein (1981) found the employment rates for high school seniors to be 49% for African-Americans, 60% for Hispanic-Americans, and 65% for whites. In a similar study Greenburg and Steinberg (1986) found considerably higher rates of working for white high school students than for minorities: 42% of white and Hispanic-American students were employed compared to only 19% of African-American youths working during high school.

Overall, African-Americans had consistently lower patterns of work participation during high school than their white and Hispanic-American cohorts. Furthermore, regardless of age, grade or gender, whites were reported to have the highest proportion of employment during high school (Charner & Fraser, 1987).

Socioeconomic status. Data on the relationship between SES and student work experiences during high school was ambiguous. The Lewin-Epstein (1981) study suggested that students from middle income backgrounds were more likely to

work during high school than were lower and upper income students. In contrast, neither the 1986 study conducted by Mortimer and Finch (as cited in Charner & Fraser, 1987) nor the analyses by Meyer and Wise (1979) reported a relationship between SES and a student's propensity to work while in high school.

In general, the image that emerged from the studies cited was that work participation rates do not differ significantly across socioeconomic class.

Residence. Very few studies have examined the differences in student work patterns by geographical region. Charner and Fraser (1987) reviewed information from two national data based studies and concluded that students living in the North Central and Northwest regions of the country had higher rates of work participation, while the lowest rates for working during school were found among students from the South.

High school curriculum. Most people assume that students who take vocational education in high school are more likely to work because this curriculum stresses preparing youth for work, yet high school curricula seemed to make little difference in the work patterns of students.

High school students in vocational education tracks

were only slightly more likely to work than their peers in the general or college prep tracks (Charner & Fraser, 1987). Specifically, one study indicated that 72% of vocationally tracked students worked during high school compared to employment rates of 65% and 68% for students in the general and college prep tracks respectively (Lewis, Gardner & Seitz, 1983).

In summary, a complete pattern of work activities during high school was not found due to differing definitions of working used in the various studies. The pattern of working during high school that was discerned can be summarized as follows:

1. Working while in high school increased in the last twenty-five years.
2. African-American students have a far lower rate of employment during high school than white or Hispanic-American youth.
3. A number of researchers found little differences in work patterns for youth from different SES backgrounds.
4. Working during high school varied by region of the country and type of community.

5. High school students in vocational tracks were only slightly more likely to work than students in the general or college prep tracks.

The Nature of High School Work Experiences

Desy et al. (1984) indicated that the nature of jobs students had during high school could be generally divided into two types: "school-supervised" and/or "student-obtained". Work-study and cooperative vocational education programs composed the majority of school-supervised work experience programs; all other jobs--baby-sitting, baggers at supermarkets, mowing lawns, etc.--were considered student-obtained work experiences. Literature further characterized high school work experiences as predominately part-time, low-level, low-paying, low skilled, non-career oriented, gender biased and "dead-end" (Lewis et al., 1983; Greenberg & Steinberg, 1986).

While most research on the nature of student work experiences during high school have been unidimensional, focusing on work versus non-work, it is possible to put together a broad picture of the nature of these work experiences. The examination which follows focuses on the types of jobs students held and length of employment while in school.

Organized, school related work experiences. One of the most often cited school-supervised work experiences available to high school students was cooperative education (Co-op). At the high school level, Co-op participants generally attend classes for part of the day and work for part of the day (Smith & Rojewski, 1993).

The high school level of Co-op was typically associated with vocational education and part of a specific instructional area (e.g., marketing education, business and office education, trade and industrial education) program (Smith & Rojewski, 1993). According to Stone and Wosner (1990) "the intent of cooperative education is to provide students with opportunities to alternative academic studies with relevant work experiences, allowing them to apply what they have learned in the classroom to the job" (p. 27).

Data on the actual number of secondary vocational education students who participated in school-supervised work experiences were not available. There were no data systems that gathered detailed information on work-study participation during high school, however information on Co-op participation was maintained. This data indicated that relatively few youth participated in high school Co-op programs (U.S. GAO, August 1991).

According to a survey of state education directors, about 430,000 high school students were enrolled in Co-op programs during the 1998-90 school year (U.S. GAO, August 1991). It was estimated that the 8% of high school juniors and seniors who participated were concentrated in three vocational areas: marketing (37% of Co-op students), trade and industry (19%), and business and office (17%). The marketing placements were primarily in retail sales, while trade and industry placements included auto mechanics, auto body work, carpentry and construction; business and office placements were typically clerical and secretarial (U.S. GAO, August 1991).

Although vocational education students were more likely to be enrolled in a high school Co-op program, it was reported that during the 1979-80 school year 10% of those taking occupational specific secondary vocational programs participated in Co-op (Desy et al., 1984). Recent data indicated that vocational education students participating in Co-op programs was approximately 25% (U.S. GAO, August 1991).

In terms of gender, ethnicity, and SES background, males and females participation in Co-op was proportional to their high school enrollment; white, African-Americans and

Hispanic-Americans also participated in Co-op at rates comparable to their numbers among high school students (U.S. GAO, August 1991). While Co-op participants were more likely to come from lower SES backgrounds, Co-op participation was not limited to poor youth. Approximately 41% of high school Co-op participants came from the upper half of the socioeconomic status distribution (U.S. GAO, August 1991).

The review thus far on the nature of work experiences during high school has addressed structured experiences that involved formal linkages between curriculum and work placement. Yet it is well known that most jobs held during high school are naturally occurring work experiences that youth find on their own (Desy, et al., 1984; Fraser et al., 1993).

Student-obtained work experiences. Research that has examined working during high school suggested that while students gain some skills from the jobs they held in high school, these positions were generally not tied to academic education or to school programs like vocational education, nor were they linked to any career path (Fraser et al., 1993).

These student-obtained jobs tended to be concentrated in a small number of industries and occupations (Fraser et

al., 1993). Data analyzed from the National Longitudinal Survey (NLS) indicated that differences in the types of job student had in high school were related to both gender and race.

In an examination of early NLS data on the last jobs students held during high school, Stevenson (1978) analyzes revealed the following:

1. Approximately 80% of white high school males worked in five occupations: operators (20%), service workers (16%), laborers (16%), sales (14%) and farm laborers (13%).
2. African-American males worked in only two occupations in proportions of greater than ten percent: 27% were service workers, and one-fifth were operators.
3. Ninety percent of white high school females worked in four occupations: 32% were clerical workers, 29% were service workers, 22% worked in sales, and 10% worked in private households.
4. African-American females were concentrated in three occupational groups: clerical workers (31%), service workers (27%), and private household workers (20%) (as cited in Charner & Fraser, 1987).

In a similar study Charner and Fraser (1987) found that 30% of working male students were in service occupations, 22 % were laborers, and 15% were operators. In contrast, females held jobs in most often in service (39%) and clerical (31%) occupations with smaller percentages holding household service (10%) and sales (9%) jobs.

Additional data on the types of jobs high school students hold was provided from analysis of the HS&B survey conducted by Lewin-Epstein. Lewin-Epstein (1981) indicated that in terms of ethnic differences for the sophomore cohort, African-Americans were more likely to hold "odd jobs", Hispanic-Americans were more likely to work in food service and as store clerks, and whites were more likely to baby-sit. For the senior cohort, whites were more likely to work as store clerks than African-Americans or Hispanic-Americans, while African-Americans were more likely to work in clerical positions.

Beyond gender and racial differences in terms of student obtained work experiences, differences were found in the types of jobs held by students from different high school curriculum tracks. First, sophomores in the college prep track were more likely to baby-sit (32%) than were students in either the general track (24%) or the vocational

track (21%). Second, college prep sophomores were less likely to work on farms (4%) than were general education (7%) and vocational education (10%) students (Charner & Fraser, 1987).

Finally, seniors in the vocational education curriculum differed significantly. They were less likely to work as store clerks or food service workers and more likely to hold jobs in clerical areas and the skilled trades (Charner & Fraser, 1987).

In summary, there appeared to be clear differences in the nature of high school work experiences based on gender, ethnicity and school program. Concern must be voiced about the lack of comparability across the different studies cited with regards to types of jobs students in high school hold. The job categories used by Lewin-Epstein in his analysis of the HS&B survey did not correspond to the job classifications used in the analysis of the NLS data (Charner & Fraser, 1987).

Length of Employment during high school. Very few studies have examined length of employment during the school year. D'Amico's (1983) estimation of the duration of employment for high school males indicated that 25% were never employed, 24% were worked only one year during high

school, 24% worked two years, and 27% worked each year they were in school.

Similarly, in 1986 Mortimer and Finch (as cited in Charner & Fraser, 1987) estimated the duration of employment for male high school students and found: 25% never worked during high school; 29% worked for one year; 30% worked for two years, and 18% worked each year they were in high school.

Although few studies have examined the length of time high school students work, many more have looked at hours worked. Difficulty in comparing these data arises because there is little consistency across studies in how hours of work was measured. Stevenson (1978) measured the "number of hours worked last week" and found that male high school students worked approximately 18 hours per week and females worked an average of 14 hours per week.

Lewin-Epstein (1981) analyses of HS&B data found that high school males worked more hours than females, with male seniors working about 21 hours per week and females seniors working approximately 17 hours per week. When ethnicity was considered, Hispanic-Americans averaged 15.2 hours per week, followed by African-Americans working 12.9 hours and whites working 12.4 hours. Finally, high school students in

vocational education tracks worked on average 14 hours, while students in the general and college prep tracks worked 13.2 hours and 11 hours, respectively.

Lewis et al. (1983) found that high school students averaged 20 hours of work per week; the average for males (21 hours) was slightly higher than for females (18 hours). However, it was also found that one-fifth of high school males and 14% of high school females worked over 30 hours per week.

In examining the length of time high school students were employed and the number of hours they worked per week, what do the data show? First, approximately 25% of all high school students never work while in school, yet those working one, two or three years during high school do so in similar proportion. Second, a majority of students who do work while in high school work less than 20 hours per week. Third, a substantial number of students work over 30 hours per week; with males working somewhat longer hours than females. Fourth, minority high school students work fewer hours per week than white students. Finally, while tenth graders tended to work at least half the school year, one-third of eleventh graders and one-half of twelfth graders worked half the school year or more.

Post Graduation Effects of Working During High School

All the data reviewed up to this point indicated that a surprisingly large number of high school students work. Although the great majority of jobs held during high school were not complex in their demands, several important questions remain to be examined. What is the impact of working during high school on later employment and earnings? Do these effects persist over time?

Meyer and Wise (1979) examining NLS data found that working part-time during high school was associated with positive increases in length of employment (measured in weeks worked) and income earned in the year immediately after high school. In comparison Lewis et al. (1983) examined the NLS data of working during high school two years after graduation. For students not continuing their education, working while in school was found to have few significant effects on subsequent length of employment or weekly earnings. In terms of positive effect, those with work experience gained during high school spent relatively less time unemployed.

In their 1986 study of male high school students Motimer and Finch (as cited in Charner & Fraser, 1987) found that working during high school appeared to have "short-

term" economic advantages. Five years after graduation those students who had working during school had 27% higher earnings than those who did not work while in school.

Finally, in terms of the relationship between high school curriculum, working while in school and post graduation labor market outcomes, it was reported that post secondary unemployment was lower for vocational graduates who had worked in student-obtained jobs than for those who worked in organized, school-related jobs (Desy et al., 1984). Those students who held both student-obtained jobs and school-related jobs prior to graduation experienced the lowest rate of unemployment (Desy et al., 1984).

Conclusion

The growing body of literature on the issues and concerns relating to school-to-work transition indicated that more young people are experiencing difficulty moving from school into adult roles and the workplace (Charner, 1990; Fraser & Charner, 1993). While it is typically assumed that non-college attending youth will be better prepared for employment if they take vocational education and have some kind of work experience while in high school, empirical evidence regarding the consequences of either secondary

vocational education and/or high school work experience has been mixed.

Are non-college attending youth better off after high school economically if they take vocational education? To this point the answer remains ambiguous: white males and minority females appeared to gain some short-term benefits, yet these gains were not consistent across the various studies.

Do non-college attending students benefit from working during high school once they graduate and attempt to enter the labor market? The extent to which non-college attending student benefited from working during high school appeared to accrue to whites. African-American and Hispanic-American youth, who continue to encounter barriers to economic attainment, did not appear to benefit from working while in high school to the same extent as white youth.

Due to ambiguities in the research conducted to date with regards to post graduation labor market benefits of either taking secondary vocational education courses and/or working during high school, it appears that additional research in this area is warranted.

Without further research to examine more closely who benefits in the short-term and long-term from participation

in vocational education and working during high school and what those benefits are, those who are most at-risk for unemployment and/or underemployment--minorities, women, and lower SES, non-college attending youth--will never gain what it takes to achieve long-term productive employment. They will be a permanent burden on society.

While it is encouraging to see serious attention being paid to developing a system that helps students who want to work after completing high school. It is equally clear that there are many issues and problems related to the youth transition dilemma that must be examined as educators and political leaders continue to restructure secondary education in attempts to assist America's youth as they transition from school to the labor market.

CHAPTER THREE

METHODOLOGY

This study focused on the direct and indirect effects of secondary vocational education course work, academic course work, and secondary Co-op experience on long-term (ten years after graduation) labor market experiences of African-Americans, Hispanic-Americans, and female subgroups of non-college attending high school graduates. The study was organized around three questions. Briefly stated:

1. Over the long-term, what effect does taking secondary vocational education courses, compared to taking more academic courses, have on the earned income and employment length of non-college attending females and selected ethnic minority high school graduates?
2. Does participation in high school Co-op have any long-term effects on earned income and employment length for selected minority and female non-college attending high school graduates?
3. When non-college attending youth combine secondary vocational education with Co-op experience, what additive effect does secondary Co-op experience have on long-term post secondary labor market experiences in terms of earned income and length of employment?

Subjects

Data for this study were drawn from the base year (1980) through fourth follow-up (1992) of the 1980 sophomore cohort in the National Center for Educational Statistics High School and Beyond longitudinal (HS&B) study and the 1982 HS&B Secondary Transcripts Study (HSTS). The 1980 base year HS&B sample included over 30,000 sophomores enrolled in high schools across the United States (Frankel, Kohnke, Buonanno, & Tourangeau, 1981). The fourth follow-up of the 1980 sophomore cohort included approximately 14,825 sample members retained from the base year and previous follow-ups (NCES, 1995).

This study was concerned with non-college attending, non-disabled high school graduates. Therefore subjects included in the analyses for this study were selected from the 1980 sophomore cohort by applying the following criteria:

1. graduated from high school in May or June 1982;
2. did not attend post-secondary school or college between June 1982 and January 1993, and
3. did not participate in educational programs for students with disabilities or indicate the existence of a disabling condition.

Only those students who participated in all surveys (base year through fourth follow-up and transcripts) and met the criteria stated previously, were included in the present analyses. Matrices were produced using pairwise deletion of missing values.

All members of the 1980 sophomore cohort, who met the criteria (minimum pairwise $n = 313$), were used in the initial analysis of the causal model. Selected subgroups of this sample of high school graduates were further partitioned to allow for the testing of the causal model for females (minimum pairwise $n = 108$), African-Americans (minimum pairwise $n = 74$), and Hispanic-Americans (minimum pairwise $n = 42$) separately.

Dataset

The HS&B is a research studies program designed to build on the National Longitudinal Study (NLS-72). The base year survey was conducted in the spring of 1980 and included over 30,000 sophomores and 28,000 seniors enrolled in approximately 1015 public and private high schools in the United States (Sebring, Campbell, Glusberg, Spencer, Singleton & Turner, 1987). Survey instruments used during base year data collection include: sophomore and senior questionnaires, student identification pages, cognitive

tests for each cohort, school questionnaires, parent questionnaires (mailed to a sample of parents from both cohorts), and teacher comment checklist (NCES, 1995).

The first follow-up data, for the sophomore cohort was collected through group administration of questionnaires and tests. Second and third follow-up data for the 1980 sophomore cohort were collected through a self administered mail back questionnaire.

Unlike previous follow-ups, data were collected for the fourth follow-up via Computer Assisted Telephone Interview. By the end of the data collection period in January, 1993, 85.3 of the interviews had been completed (NCES, 1995).

High school transcripts were collected for the sophomore cohort prior to the first follow-up. The HSTS transcripts include all academic and vocational education courses taken by students. This sample was restricted to those who graduate from public school and included approximately 9,400 persons from the 1980 sophomore cohort (NCES, 1992).

While HS&B provides a nationally representative sample of high school students, sampling characteristics reduce its representiveness. Some groups of student (e.g., minorities) were oversampled, resulting in differences in participation

by different groups in the follow-ups. To increase representation, several weighting variables are provided in the HS&B Data Analysis System (DAS). All analyses reported here were based on matrices weighted by the appropriate weighting variable.

The public release version of the DAS for HS&B was used to select variables used in the analyses of the data for this study. The DAS contains raw data specific to the HS&B sophomore cohort as well as derived composite variables for some of these data. The public release version of the DAS does not contain all the variables collected as part of HS&B, but did contain those which were of interest in these analyses. The following variables, selected from the pool of variables on the HS&B DAS, were used.

Exogenous Variables

Exogenous variables are constructs within the path model that are influenced by causes outside the causal model under consideration in the present study. No predictions were made about what influences SES, ability, or high school size have on outcomes. The exogenous variables included in the hypothesized causal model examined are briefly described below.

Socioeconomic Status (BYSES). This variable in the HS&B data was a percentile composite constructed using first follow-up data. This variable was based on five components: (1) father's occupation, (2) father's education, (3) mother's education, (4) family income, and (5) material possessions in the household. This variable was originally coded as a standard normal variable (zero mean, unit variance), but in the DAS was converted to percentile using the SAS rank order procedure called PROC RANK with the following parameters: GROUP=100 OUT=<data set name> VAR BYSES; RANK BYSES (HS&B, 1995).

Ability (BYTEST). This variable was a test composite score based on the average of non-missing reading, vocabulary, and mathematics (part 1) standardized scores from test administered during the base year of data collection for the 1980 sophomore cohort.

High school size (SB002A). This variable was from the 1980 and 1982 school questionnaires completed by school administrators. It reports actual student head count reported by those schools participating in HS&B.

Endogenous Variables

Endogenous variables are those whose variation is predicted to be partially explained by the exogenous and

other antecedent endogenous variables in the hypothesized causal model. The endogenous variables in the proposed causal model are described below.

Vocational curriculum (CTII). This was the sum of Carnegie units that students in the 1980 sophomore cohort earned. Carnegie units are standardized measures used in secondary education to represent completion of a high school course that meets one period per day for an academic year (NCES, 1992). This variable was based on high school transcripts, using the taxonomic hierarchies of Classification of Secondary School Courses (CSSC) codes defined in the April 1992 NCES report "Vocational education in the United States: 1969-1990". The vocational curriculum is composed of three curricular areas: 1) consumer and homemaking education, 2) general labor market preparation, and 3) specific labor market preparation (NCES, 1992). A more detailed description of this taxonomy has been provided in the Appendix.

Academic credits earned (CTI). This variable was the sum of Carnegie units students in the 1980 sophomore cohort earned in six main subject areas based upon the aforementioned taxonomic hierarchies of CSSC codes. The subject areas include: 1) mathematics, 2) science, 3)

English, 4) social studies, 5) fine arts, and 6) foreign languages.

Co-op work experience during high school (FY11A3). This binary variable was based on respondent response to the question: "In your junior or senior year, have you heard of or participated in the following High school education program?" Co-op was among the options listed and responses ranged from "heard of and participated" (coded 1) or heard of but have not participated" to "never heard of, have not participated (here both were coded 0).

Employment (AVELFPM1). This variable measured the average length of labor force participation for respondents since the attainment of their highest degree. It was a composite variable constructed by dividing respondent's reported months of labor force participation, since 1982, by the number of 'spells' of no labor force participation within the period 1982-1992. A spell of no labor force participation was counted when the time lapse between two employment status points in time was separated by more than one month. Values for this variable were coded as missing if the respondent never participated in the labor force or when the required number of months variable were missing (NCES, 1995).

Income (RELEA10). This variable reported the real annual earnings, in 1992 dollars for respondents ten years after high school. It included all respondents who were in the labor force at some point during 1992.

Procedure

The HS&B Fourth Follow-up DAS was downloaded from the NCES internet gopher (gopher.ed.gov) to the VAX at Winthrop University. The most recently updated version (8/11/95) of the DAS was used to derive the four subsamples and all variables used in the present study. Once variables were selected, the correlation parameter files (cpf) were sent to the e-mail DAS on the internet (LSB_DAS@inet.ed.gov) for processing of the correlation matrices used in this study's analyses.

Analysis of Data

Overview of path analysis. Path analysis is a statistical method for testing a theoretical model which specifies causal relationships between several observed variables. It examines the direct and indirect effects of variables hypothesized as causes of variables treated as effects and attempts to determine if a theoretical model successfully accounts for the actual relationships observed in the sample data. Path analysis is not a statistical

procedure for determining causation (Pedhazur, 1982; Hatcher, 1994).

All analyses were conducted using the SAS System's CALIS procedure and were performed on variance-covariance matrices. The maximum-likelihood method of parameter estimation was used in all analyses.

Covariance matrices were used because analyses performed using correlation matrices are generally less desirable. When correlation matrices are analyzed they are likely to provide invalid standard errors of parameter estimates, which then result in significance tests for the path coefficients being inaccurate (Hatcher, 1994).

Proposed causal model. This study was interested in the long-term direct and indirect effects of secondary vocational education and Co-op experience on post-secondary employment and earnings for non-college attending youth. Path analysis was used to test the theoretical model which examined the causal relationships between the observed variables. Presented in Figure 1 is the hypothesized causal model for all non-college attending high school graduates and for the aggregated female, African-American, and Hispanic-American high school graduate subgroups examined in this study. The path model displayed in Figure 1 identified

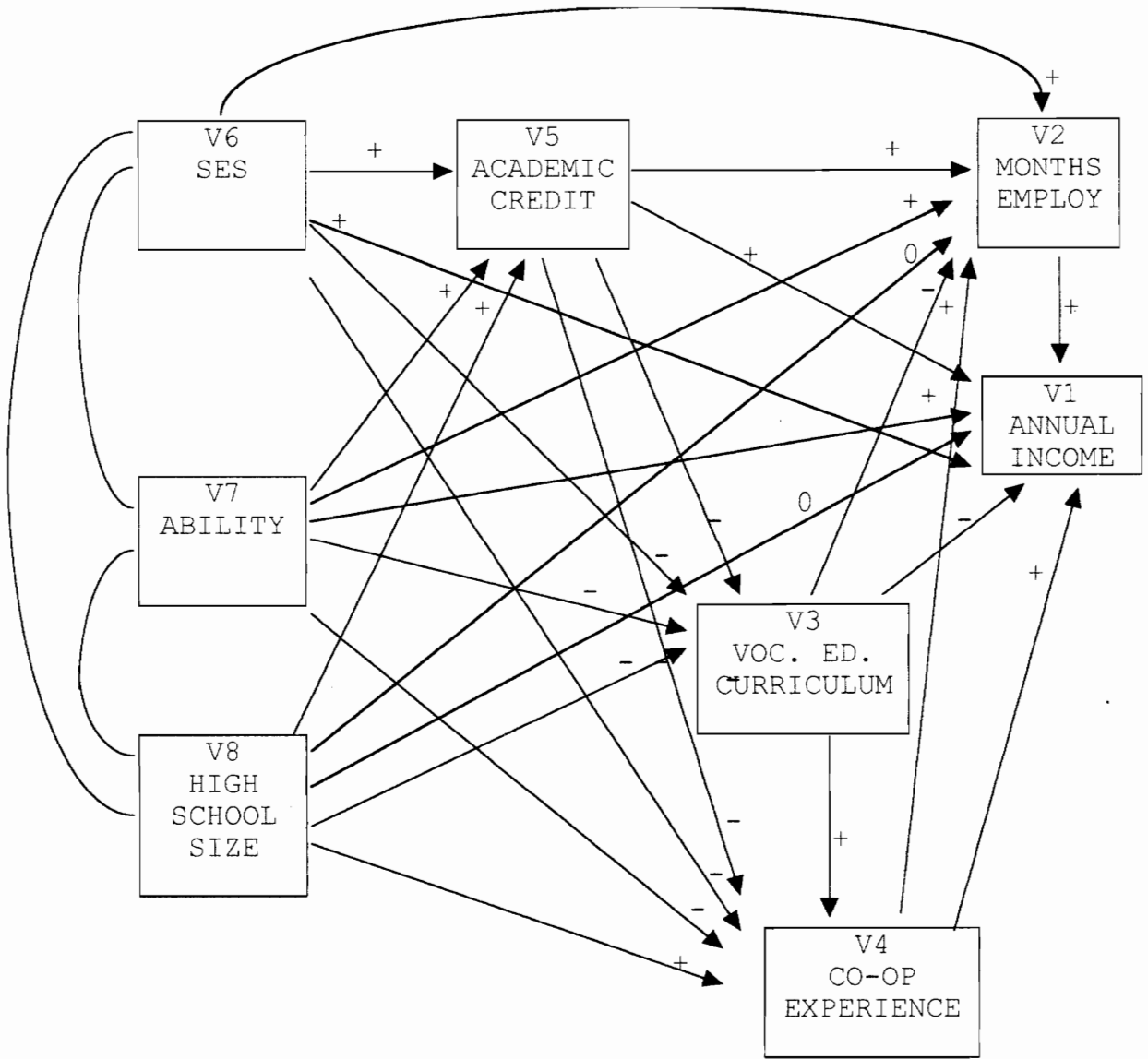


Figure 1. Hypothesized Causal Model for All Non-college Attending High School Graduates and female, African-American, and Hispanic-American subgroups

the predicted determinants of a non-college attending high school graduate's post-secondary labor market experiences, in terms of length of employment and earnings.

The hypothesized causal model presented in Figure 1 considered three exogenous variables (e.g. SES, ability, and high school size) to be correlated, however these relationships were not analyzed in the present study. The remaining variables in the model are endogenous and were hypothesized to have explicit causes represented in the model.

The SES and ability variables were expected to exert positive effects on academic credit, months employed and annual income, while exerting negative effects on vocational education curriculum and Co-op experience. In other words, students with more ability or who come from higher SES backgrounds were expected to take more academic courses in high school, and to work more months and earn more annually after graduation.

The high school size variable was expected to exert a positive effect on academic credit and Co-op experience; a negative effect on vocational education curriculum, and no effect on months employed and annual income. That is, as high school size increases students take more academic

courses in high school due to the availability of a greater range of these type courses. They are expected to take fewer classes within the vocational education curriculum and are less likely to participate in high school Co-op. High school size was expected to have no direct effect on how many months high school graduates work or how much they earn annually after graduation.

Academic credit, vocational education curriculum, and Co-op experience were considered dependent on SES, ability, and high school size. It was expected that taking academic courses would negatively influence participation in secondary vocational education and Co-op. The direction of this effect was based on the fact that students who take more academic courses in high school have decreased opportunities to take vocational courses or participate in Co-op due to maximum course credit limitations. On the other hand, it was expected that increased participation in secondary vocational curricula would positively effect Co-op participation, given the similarity in instructional goals.

Finally, months employed and annual income were expected to be dependent on the exogenous variables of SES, ability, and high school size and all preceding endogenous variables. Positive effects on months employed and annual

income were expected from the predetermined variables of academic credit and Co-op experience.

Vocational education curriculum was expected to have a negative effect on months employed and annual income. This hypothesized effect was based, in part on findings reported in the literature. Specifically, the findings of Campbell and his colleagues indicating that African-Americans and females had less continuous labor force participation than white males and no clear payoff in terms of earnings for students who participated in vocational education during high school (Campbell et al., 1986).

A second reason for the negative hypothesized effect of secondary vocational education participation on post-graduation labor market outcomes was the fact that high school vocational course taking decreased during the 1980's. Furthermore students who took vocational courses were less likely to concentrate their course work within a given concentration area (U.S. Department of Education, 1994). Given that secondary vocational education is typically viewed as the curriculum which trains students for entry-level jobs, it was speculated that non-college attending students who take few vocational courses are unlikely to have the skills needed for jobs employing new technology. It has

been reported that students who concentrate their high school vocational course work in a particular area were more likely to find training related jobs, earn more money and have lower incidences of unemployment (Boesel & McFarland, 1994).

To date, there is little evidence that non-college attending high school graduates do better in the labor market if they take secondary vocational courses. In contrast it has been reported that non-college attending graduates who take academic courses experience short-term, small positive effects on earnings and employment (Boesel & McFarland, 1994).

CHAPTER FOUR

RESULTS

Descriptive Statistics

The means and standard deviations for all variables utilized in this study are shown in Table 1. Examining the means for annual income, one can see that young people who did not continue their education beyond the attainment of a high school diploma, had mean annual incomes significantly below the mean poverty level income of \$12,674 for a family of four reported by the U.S. GAO (1993). While the mean income for Hispanic-American high school graduates was higher than that of female and African-American high school graduates, this difference may be a reflection of differences in employment length for the various subgroups.

In terms of length of employment, Hispanic-American high school graduates had longer labor force participation, on average, since graduating in 1982 than females or African-Americans with only a high school education. No substantial difference in length of employment for females and African-American high school graduates was evident.

The four subgroups of high school graduates examined had comparable secondary vocational education participation

Table 1

Variable Means and Standard Deviations for High School Graduate Subgroups in Study

Variable	All Grads.		Female Grads.		African-American Grads.		Hispanic Grads.	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Annual Income	8749.78	13030.08	6923.54	13025.60	7178.88	12512.21	8429.29	14927.11
Months Employ	68.10	37.57	58.69	38.44	58.14	47.55	72.40	60.16
Vocational Credit	4.84	2.92	5.03	3.06	4.23	2.84	4.46	4.03
Had Co-op	0.15	0.32	0.12	0.51	0.11	0.31	0.07	0.30
Academic Credit	12.42	4.31	13.01	4.51	12.60	6.74	11.67	8.48
SES	43.52	27.00	39.97	27.63	27.76	29.98	31.52	38.15
Ability	394.01	26.29	381.48	27.38	223.03	29.98	252.85	31.56
H.S. Size	1304.74	858.81	1259.91	901.39	1334.89	1132.89	1517.43	1341.07

Note. Minimum pairwise n used in all analyses.

and earned comparable academic credits while in high school. These subgroups also participated in secondary Co-op experiences at approximately the same rate; however, Hispanic-American high school graduates participated at a lower rate than females and African-Americans who completed high school.

One can also see in Table 1 the necessity for controlling for the exogenous variables in assessing the long-term impact of vocational education on post-secondary employment and income for non-college attending youth in general, and female, African-American, and Hispanic-American subsamples in particular. Ability and SES evidenced mean differences between female, African-American, and Hispanic-American high school graduates. By examining the means alone it would appear that African-American and Hispanic-American high school graduates, who did not continue their education, were from lower SES families, when compared to all non-college attending high school graduates in general. Furthermore, it would appear that African-American and Hispanic-American high school graduates had lower ability scores than female high school graduates.

Tables 2 through 5 display the intercorrelation matrices for variables used in the analyses of data for the

Table 2
Intercorrelations Among Variables for the All High School Graduates Sample

Variable	1	2	3	4	5	6	7	8
	<u>N</u>							
1. Annual Income	313	1.000						
2. Months Employ	550	0.073	1.000					
3. Vocational Credit	546	-.047	-.034	1.000				
4. Had Co-op	362	0.026	0.037	0.084	1.000			
5. Academic Credit	546	0.008	0.006	-.041	-.168	1.000		
6. SES	444	0.094	0.132	-.169	0.025	0.150	1.000	
7. Ability	404	0.079	0.076	-.201	-.014	0.241	0.289	1.000
8. Size	471	0.035	0.090	-.094	-.008	0.084	0.087	0.011

Note. Minimum pairwise $n = 313$

Table 3
Intercorrelations Among Variables for the Female High School Graduates Subsample

Variable	1	2	3	4	5	6	7	8
	N							
1. Annual Income	108	1.000						
2. Months Employ	239	0.043	1.000					
3. Vocational Credit	236	-.150	-.091	1.000				
4. Had Co-op	156	0.009	-.046	0.075	1.000			
5. Academic Credit	263	0.090	0.079	-.149	-.148	1.000		
6. SES	194	0.128	0.170	0.019	0.019	0.243	1.000	
7. Ability	175	0.204	0.027	-.264	-.041	0.304	0.338	1.000
8. Size	191	0.128	0.156	-.087	-.025	0.154	0.128	-.048
								1.000

Note. Minimum pairwise $n = 108$

Table 4

Intercorrelations Among Variables for the African-American High School Graduates Subsample

Variable	1	2	3	4	5	6	7	8
	N							
1. Annual Income	74	1.000						
2. Months Employ	110	0.017	1.000					
3. Vocational Credit	109	-.145	-.164	1.000				
4. Had Co-op	82	-.108	-.122	0.219	1.000			
5. Academic Credit	109	0.153	-.056	-.170	-.194	1.000		
6. SES	92	0.040	0.252	-.165	-.034	0.057	1.000	
7. Ability	80	0.104	-.080	-.297	-.087	0.315	-.041	1.000
8. Size	92	-.107	0.016	-.205	-.069	-.329	0.163	-.008
								1.000

Note. Minimum stepwise \bar{n} = 74.

Table 5

Intercorrelations Among Variables for the Hispanic-American High School Graduates Subsample

Variable	1	2	3	4	5	6	7	8	
	N								
1. Annual Income	52	1.000							
2. Months Employ	92	-.026	1.000						
3. Vocational Credit	92	-.264	0.006	1.000					
4. Had Co-op	61	-.113	0.039	0.042	1.000				
5. Academic Credit	92	0.063	0.068	-.055	-.027	1.000			
6. SES	62	0.150	-.126	-.317	-.009	-.076	1.000		
7. Ability	42	0.226	-.278	-.219	-.194	0.091	0.303	1.000	
8. Size	75	0.185	-.360	-.433	0.008	-.201	-.107	-.033	1.000

Note. Minimum pairwise $n = 42$.

all high school graduates subgroup, and for female, African-American and Hispanic-American high school graduate subgroups, respectively. The correlations reported were based upon minimum pairwise n 's for each subgroup.

Using path analysis, least-squares estimates of the parameters for the hypothesized causal model of economic outcomes were obtained. Tables 6 through 9 show the estimates for each subgroup of high school graduates examined.

In the analyses for all high school graduates (see Table 6) the predetermined variables together accounted for only 1.7% of the variation in annual income and 2.7% of the variation in average length of months employed for these young people who did not continue their education beyond high school. Of the remaining variables in the model for all high school graduates 1.7% of the variation in academic credit was accounted for by SES, ability and high school size. Furthermore these three exogenous variables accounted for 6.1% of the variation in vocational education curriculum, and 4% of the variance in Co-op experience.

In the analyses for the female subgroup of high school graduates who did not continue their education beyond high school (see Table 7), the predetermined variables together

Table 6a
 Least Squares Estimates of Parameters of the Economic Outcome Model for All Non-
 College Attending High School Graduates (n=313)

Standardized coefficients	
Independent variable	
Dependent variable	SES Ability HS Size Academic Credit Voc Ed Curric. Co-op Exper. Months Employ
Academic Credit	.080 .217** .074
Voc Ed Curric.	-.115* -.173 .025**
Co-op Exper.	.058 .032 -.182** .094
Months Employ	.114* .048 -.024 .031
Annual Income	.006 .054 -.014 -.023 .024 .056

*p < .05

**p < .01

Table 6b
 Least Squares Estimates of Parameters of the Economic Outcome Model for All Non-
 College Attending High School Graduates (n=313)

Dependent variable	Metric coefficients ^a							R ²
	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ	
Academic Credit	.128 (.091)	.356 (.094)	.037 (.028)					.017
Voc Ed Curric.	-.125 (.062)	-.192 (.065)	-.029 (.019)	.017 (.039)				.061
Co-op Exper.	.007 (.007)	.004 (.007)	.000 (.002)	-.014 (.004)	.010 (.006)			.040
Months Employ	.159 (.082)	.068 (.087)	.036 (.025)	-.021 (.051)	-.002 (.075)	.365 (.670)		.027
Annual Income	.032 (.029)	.027 (.030)	.003 (.009)	-.004 (.018)	-.010 (.026)	.097 (.234)	.020 (.020)	.017

^aStandard Errors in parentheses

Table 7a
 Least Squares Estimates of Parameters of the Economic Outcome Model for Female
 Non-College Attending High School Graduates (n=108)

		Standardized coefficients					
		Independent variable					
Dependent variable	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ
Academic Credit	.134	.265**	.150				
Voc Ed Curric.	-.115	-.215	-.076	-.044			
Co-op Exper.	.071	-.001	-.005	-.154	.066		
Months Employ	.152	-.040	.126	.021	-.053	-.040	
Annual Income	.033	.177	.124	-.001	-.087	.026	.006

*p < .05

**p < .01

Table 7b
 Least Squares Estimates of Parameters of the Economic Outcome Model for Female
 Non-College Attending High School Graduates (n=108)

Dependent variable	Metric coefficients ^a							R ²
	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ	
Academic Credit	.220 (.158)	.437 (.158)	.075 (.046)					.136
Voc Ed Curric.	-.127 (.111)	-.240 (.114)	-.026 (.032)	-.030 (.067)				.094
Co-op Exper.	.008 (.012)	-.000 (.013)	-.000 (.004)	-.011 (.007)	.007 (.011)			.029
Months Employ	.211 (.143)	-.057 (.149)	.054 (.041)	.018 (.087)	-.067 (.124)	-.468 (1.125)		.053
Annual Income	.015 (.049)	.084 (.050)	.018 (.014)	-.000 (.029)	-.037 (.042)	.102 (.378)	.002 (.033)	.070

^aStandard Errors in parentheses

accounted for 7% of the variance in annual income and 5.3% of the variance in length of labor force participation. For this subgroup SES, ability and high school size accounted for 13.6% of the variance in academic credit earned, 9.4% of the variance in vocational education curriculum, and 2.9% of the variation in Co-op experience.

In the analyses for the African-American subgroup of high school graduates (see Table 8) the predetermined variables together accounted for 5.5% of the variation in annual income and 11.5% of the variance in average length of months employed ten years after graduation. For African-Americans who do not continue their education beyond high school SES, ability, and high school size accounted for 22.2% of the variation in academic credits earned in high school, 17.3% of the variance in vocational education curriculum participation, and 8.3% of the variation in Co-op experience.

The final subgroup of non-college attending high school graduates which were examined was Hispanic-Americans (see Table 9). For this subgroup, the predetermined variables in the model accounted for 13.5% of the variance in annual income and 31.2% of the variation in average months employed since graduation. SES, ability, and high school size

Table 8a
 Least Squares Estimates of Parameters of the Economic Outcome Model for
 African-American Non-College Attending High School Graduates (n=74)

		Standardized coefficients						
		Independent variable						
Dependent variable	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ	
Academic Credit	.127	.318**	-.347**					
Voc Ed Curric.	-.127	-.253	-.240	-.162				
Co-op Exper.	.025	.031	-.107*	-.211	.174			
Months Employ	.241*	-.090	-.109	-.128	-.169	-.117		
Annual Income	.038	.040	-.124	.061	-.129	-.072	-.013	

*p < .05

**p < .01

Table 8b
 Least Squares Estimates of Parameters of the Economic Outcome Model for
 African-American Non-College Attending High School Graduates (n=74)

Dependent variable	Metric coefficients ^a								R ²
	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ		
Academic Credit	.285 (.237)	.848 (.276)	-2.066 (.623)						.222
Voc Ed Curric.	-.120 (.103)	-.284 (.127)	-.600 (.035)	-.068 (.051)					.173
Co-op Exper.	.003 (.012)	.004 (.015)	-.030 (.035)	-.010 (.006)	.019 (.014)				.083
Months Employ	.383 (.131)	-.170 (.228)	-.456 (.520)	-.091 (.091)	-1.774 (1.743)	-1.774 (1.743)			.115
Annual Income	.016 (.051)	.020 (.062)	-.137 (.142)	.011 (.025)	-.057 (.057)	-.288 (.476)	-.004 (.032)		.055

^aStandard Errors in parentheses

*p < .05

**p < .01

Table 9a
 Least Squares Estimates of Parameters of the Economic Outcome Model for
 Hispanic-American Non-College Attending High School Graduates (n=42)

Dependent variable	Standardized coefficients						
	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ
Academic Credit	-.137	.126	-.212				
Voc Ed Curric.	-.351**	-.113	-.590***	-.174			
Co-op Exper.	.065	-.208	.019	.003	.025		
Months Employ	-.217	-.309*	-.569***	-.056	-.379*	-.004	
Annual Income	.112	.194	.232	.085	-.079	-.075	.123

*p < .05
 **p < .01
 ***p < .001

Table 9b
 Least Squares Estimates of Parameters of the Economic Outcome Model for
 Hispanic-American Non-College Attending High School Graduates (n=42)

Dependent variable	Metric coefficients ^a							R ²
	SES	Ability	HS Size	Academic Credit	Voc Ed Curric.	Co-op Exper.	Months Employ	
Academic Credit	-.304 (.354)	.338 (.426)	-1.339 (.961)					.135
Voc Ed Curric.	-.370 (.140)	-.144 (.168)	-1.527 (.384)	-.082 (.061)				.366
Co-op Exper.	.005 (.014)	-.020 (.016)	-.004 (.041)	.000 (.006)	.002 (.014)			.041
Months Employ	-.343 (.236)	-.590 (.269)	-2.553 (.704)	-.040 (.097)	-.567 (.243)	-.081 (2.659)		.312
Annual Income	.044 (.067)	.092 (.079)	.258 (.225)	.015 (.027)	-.029 (.072)	-.374 (.740)	.031 (.044)	.135

^aStandard Errors in parentheses

together accounted for 13.5% of the variance in academic credits earned during high school, 36.6% of the variance in vocational education curriculum, and 4.1% of the variation in Co-op experience.

Discussion of Results

A review of the literature on non-college attending individuals revealed a number of critical issues and problems related to conceptualizing a model of transition for youth seeking to enter the world of work immediately following high school. A simple model of how all young people move from high school to the labor force does not exist. The needs of minority youth, female youth and poor youth are all different. The purpose of the current research was to test a hypothesized model of predicted determinants of post-secondary labor market experiences for non-college attending minority and female high school graduates. This study sought to determine the extent to which participation in secondary vocational education and working during high school resulted in significant long-term economic benefit for selected ethnic minority and female youth after graduation. The sections which follow present the major finding of this research.

High School Curriculum and Post Secondary Labor Market Experiences

The first question this study sought to answer was whether the long-term post secondary labor market experiences of non-college attending youth, in general, and females and selected ethnic minorities in particular, who participated in secondary vocational education differed from members of these subgroups who took more academic courses during high school. Across the United States high school students can choose between taking more academic courses and fewer vocational courses or vice versa, but what does this trade off mean in terms of post graduation employment length and earned income? Prior to discussing what effect participation in the various high school curricula had on the post graduation labor market experience of females, African-Americans, and Hispanic-Americans who did not continue their education beyond high school, attention must be given to those variables thought to influence high school curriculum selection.

Variables influencing high school curriculum selection.

Previous research has indicated that participation in high school vocational programs decrease as students socioeconomic status and academic ability increase (NCES,

1992). The findings from analyses conducted during this study were basically consistent with those reported by NCES. For non-college attending high school graduates in general, and for the female and African-American subgroups of non-college attending high school graduates examined in this study, SES and ability had a direct positive effect on whether these youth took more academic courses during high school. As SES and ability increased the number of Carnegie units earned by these youth in academic areas also increased. Unexpectedly, SES had a direct negative effect on earned academic credits of the Hispanic-American subgroup examined. For these young people, as SES increased the number of Carnegie units earned in academic areas decreased. Why this effect occurred is unclear and no plausible explanation can be proposed, at this time.

For all subgroups of non-college attending youth examined SES and ability had direct negative effects on participation in secondary vocational education. This finding was consistent with previously stated expectations. If SES and ability positively effect academic course taking during high school, then finding the converse effect for secondary vocational course taking should not be surprising. The direction of this effect has several possible

explanations. Students who take more academic courses during high school either (a) have fewer opportunities to take vocational courses due to maximum course credit limitations or (b) do not tend to substitute vocational courses for academic courses, selecting instead courses from personal/other curricula options available at the high school level (see the Appendix for a more thorough description of this curriculum option).

A final variable thought to influence high school curriculum selection was high school size. It was expected that as high school size increased, the number of Carnegie units earned in academic subjects would increase while participation in secondary vocational education would decrease. This expectation was based on the fact that researchers at NCES (1992) had found that as high school size increased the average number of vocational courses taken decreased.

In the present study the expected effect of high school size on academic course taking and vocational education participation was found for the female subgroup of non-college attending high school graduates but not for African-American and Hispanic-American subgroups examined. For these subgroups of the non-college attending sample, high school

size had a negative effect on academic course credit earned during high school. One possible explanation for why increased school size led to fewer academic courses being taken by youth in the African-American and Hispanic-American subgroups is that as high schools became larger, less attention is given to guiding and 'encouraging' non-college attending ethnic minorities into academic courses. A second and equally plausible explanation is that African-American and Hispanic-American youth are more likely to be concentrated in economically depressed inner city schools where the breadth of academic course offerings might not be as extensive as those found in middle and upper middle income suburban schools.

Influences of high school curriculum on post-graduation labor market experiences. For African-American, Hispanic-American, and female high school graduates, who entered the work force without continuing their education, did participation in a particular high school curriculum lead to different labor market experiences in terms of length of employment and earned income ten years after graduation? In this study it was found that earning more academic credit during high school had a negative effect on average employment length for African-American and Hispanic-American

subgroups of non-college attending high school graduates, yet had a positive effect on average employment length for the female subgroup. In contrast, for African-American and Hispanic-American subgroups of non-college attending high school graduates examined, academic credit earned during high school had a positive direct effect on earned annual income, while earning more academic credits had a negative effect on the earned annual incomes of female high school graduates.

In other words, ten years after graduation from high school, non-college attending females who took more academic courses during high school had longer continuous periods of employment since graduation. African-American and Hispanic-American high school graduates who took more academic courses in high school changed jobs more frequently or had shorter, less continuous periods of employment in the ten years since finishing high school. It was not possible, based in the analyses performed in this study, to determine if African-American and Hispanic-American non-college attending high school graduates who took more academic courses average fewer months of continuous employment because they elected to change jobs or if extraneous factors in the United States economy influenced their average length

of employment since graduation from high school. While highly speculative, either reason could possibly explain the finding of the present analyses for these two subgroups of non-college attending high school graduates.

Furthermore, it is possible that differences in earned income for the various subgroups of non-college attending high school graduates who took academic courses during high school may be the result of females holding lower paying positions for longer periods of time, while African-American and Hispanic-American high school graduates may have changed jobs more frequently seeking to increase their income. In fact, it has been previously reported that academic courses have a small positive effect on wages and that this effect increases over time (Boesel & McFarland, 1994).

Finally, it had been predicted in the hypothesized model presented previously (see Figure 1), that for all subgroups of non-college attending high school graduates examined, participation in secondary vocational education would have direct negative effects on average employment length and earned annual long-term. The results obtained from this study were consistent with the previously predicted outcomes. For female, African-American, and Hispanic-American high school graduates who did not continue

their education beyond high school participation in secondary vocational education resulted in no positive, long-term effect on either average employment length or earned annual income after graduation. In fact, when secondary vocational education participation increased among African-American, Hispanic-American and female high school graduates who entered the labor force without continuing their education, the average length of employment for these young people decreased as did their annual income.

It is possible to speculate as to why participation in secondary vocational education had negative long-term effects on average length of employment and annual income for the subgroups of non-college attending youth examined. First, it would be easy to blame secondary vocational education for not adequately preparing non-college attending youth to succeed in the labor force with just a high school education, yet one must resist the temptation to paint all secondary vocational programs with the same broad brush. Secondary vocational education across the United States is a diverse, wide ranging curriculum varying in the quantity and quality of programs offered to high school students. While some schools understand the needs of the businesses and companies within their community, many more do not. In

recent years public schools have found themselves fighting for adequate funding to meet the basic educational needs of their citizens. The end result, in many cases, has been secondary vocational education programs which lack the technological tools and funding needed to prepare students to leave the classroom and enter the labor force.

Second, over the last decade, the move across America has been away from the manufacturing jobs once available to high school graduates towards high performance, high technology workplaces which require some post-high school training for even entry level positions. The result of this trend has been that in the 1980s the earnings of high school graduates fell 9 percent (Boesel & McFarland, 1994).

Third, it is possible that hiring practices among employers do not reward school achievement within the secondary vocational education curriculum and that employers are reluctant to hire many high school graduates for career-ladder positions within their companies. This reluctance may be due, in part, to the perception within the employment community that youth who take more vocational education courses in high school did so because they did not have the ability to succeed in the "more challenging" academic courses. This leads to the view, whether accurate or

inaccurate, that these high school graduates who take more vocational courses lack the active thinking, communication, and collaboration skills needed to keep their companies competitive in the global marketplace.

Finally, Campbell et al (1986) speculated that the reason vocational education does not result in positive economic outcomes for African-American, Hispanic-American, and female subgroups of high school graduates is that a majority of these graduates do not get training related jobs after high school.

Whatever the reason for the long-term negative effect secondary vocational education has on length of employment and annual income, it is clear that high school graduates who could once find relatively stable, well-paying manufacturing job have in recent years found these position more difficult to obtain. They find themselves moving from one low-paying job to another, unable to find stable positions paying more than minimum wage.

High School Co-op Experience and Post-Graduation Labor Market Outcomes

The second question the present research attempted to answer was what long-term effect participation in Co-op during high school has on earnings and employment length for

female, African-American, and Hispanic-American non-college attending high school graduates. Although there is general agreement among educators that young people who are not going to college benefit from some kind of work experience during high school, there is disagreement about the value of early work experiences that do not integrate school experience with work outside the classroom. One recent report indicated that while a majority of students work during high school, only about three percent enroll in Co-op programs (Fraser & Charner, 1993).

For the non-college attending high school graduate subgroups examined, the mean Co-op participation rate for all high school graduates was 15%, while for the aggregated subgroups of females, African-American, and Hispanic-American the mean Co-op participation rates were 12%, 11% and 7%, respectively. Given these participation rates, what variables effect Co-op participation?

Variables influencing Co-op participation during high school. Of the variables predicted to influence Co-op participation during high school only SES and vocational education participation were found to have positive direct effects on Co-op participation for all subgroups examined. While the positive effect of vocational education was

expected, the positive effect of SES on Co-op participation was somewhat unexpected.

It is possible that the positive effect of SES on Co-op participation was due to students from higher SES family backgrounds perceiving some long-term benefit from early work experiences and therefore they sought early work experience related to their interest and long-term career goals.

Of the remaining variables in the hypothesized model, ability had a positive direct effect on Co-op participation for African-American high school students, while academic course credit had a positive direct effect on Co-op participation for Hispanic-American high school graduates. Finally, as high school size increased Co-op participation decreased for the female and African-American subgroups of non-college attending high school graduates examined. Why high school size negatively influenced Co-op participation for these two subgroups of high school graduates was unclear.

Influences of Co-op experience on post-graduation labor market experiences. Early work experience gained from Co-op participation during high school was found to have a negative direct effect on average length of employment for

all subgroups of non-college attending high school graduates examined. Although previous research by Lewis and his colleagues (1983) reported that respondents with early work experience spent relatively less time unemployed, this earlier examination analyzed data two years after respondents graduated from high school. It is possible that early work experience gained from Co-op participation does initially provide non-college attending high school graduates with more opportunity for a smooth transition into the labor force, yet the findings of this study indicate that reported advantages of early work experience do not persist over time.

Finally, this study found that the only subgroup of non-college attending high school graduates for whom participation in Co-op had a positive direct effect on annual income were females. It is possible that the Co-op experiences of African-American and Hispanic-American high school graduates were in lower paying service jobs providing little opportunity for advancement and income growth should these individual continue to work in these jobs after graduation.

Combined Effect of Secondary Vocational Education and Co-op on Post-graduation Labor Market Experiences

The last question this study sought to answer was whether secondary vocational education in conjunction with early work experience gained through Co-op had any long-term effect on the post-secondary labor market experiences of non-college attending female, African-American, and Hispanic-American high school graduates. Table 10 displays the indirect causal effects on average employment length and annual income implied by the hypothesized model examined in this study. These results showed no indirect effect of secondary vocational education participation on average length of employment or annual income for any non-college subgroup of high school graduates examined.

In other words, when non-college attending youth combine secondary vocational education with Co-op experience, the additive effect of Co-op experience does not result in longer average employment length nor increased annual income earnings for the subgroups of high school graduates examined.

Conclusions

Previous research on the short-term economic benefits of participation in secondary vocational education for non-college attending youth have typically been ambiguous, while early work experiences have been found to improve

Table 10
 Indirect Effects of Exogenous Variables on Endogenous
 Variables by Subgroup

(All High School Graduates)

Exogenous variable	Endogenous variable				
	Annual Income	Months Employ	Voc. Ed. Curric.	Co-op Exper.	Acad. Credit
SES	.004	-.001	.002	-.003	.000
Ability	.001	-.008	.006	-.007	.000
HS Size	.001	-.001	.001	-.001	.000
Months Employ	0	0	0	0	0
Voc. Ed. Curric.	.001	.004	.000	.000	.000
Co-op Exper.	.007	.000	.000	.000	.000
Academic Credit	-.002	-.005	.000	.000	.000

(Female High School Graduates)

Exogenous variable	Endogenous variable				
	Annual Income	Months Employ	Voc. Ed. Curric.	Co-op Exper.	Acad. Credit
SES	.006	.011	-.007	-.003	.000
Ability	.009	.028	-.013	-.007	.000
HS Size	.001	.004	-.002	-.001	.000
Months Employ	0	0	0	0	0
Voc. Ed. Curric.	.001	-.003	.000	.000	.000
Co-op Exper.	-.010	.000	.000	.000	.000
Academic Credit	.000	.007	.000	-.000	.000

Table 10 continued
 Indirect Effects of Exogenous Variables on Endogenous
 Variables by Subgroup

(African-American High School Graduates)

Exogenous variable	Endogenous variable				
	Annual Income	Months Employ	Voc. Ed. Curric.	Co-op Exper.	Acad. Credit
SES	.011	.019	-.019	-.006	.000
Ability	.033	.040	-.058	-.015	.000
HS Size	.008	.349	.140	.011	.000
Months Employ	0	0	0	0	0
Voc. Ed. Curric.	-.004	-.034	.000	.000	.000
Co-op Exper.	.006	.000	.000	.000	.000
Academic Credit	.007	.039	.000	-.001	.000

(Hispanic-American High School Graduates)

Exogenous variable	Endogenous variable				
	Annual Income	Months Employ	Voc. Ed. Curric.	Co-op Exper.	Acad. Credit
SES	-.000	.207	.025	-.001	.000
Ability	.002	.086	-.028	-.000	.000
HS Size	-.031	.356	.110	-.003	.000
Months Employ	0	0	0	0	0
Voc. Ed. Curric.	-.018	-.000	.000	.000	.000
Co-op Exper.	-.003	.000	.000	.000	.000
Academic Credit	.003	.047	.000	-.000	.000

employability and earnings after high school. Little was known about the long-term benefit of taking secondary vocational courses and gaining early work experience on the post secondary labor market experiences of non-college attending youth.

The purpose of this study was to investigate the direct and indirect long-term effects of secondary vocational education on employment length and earnings for African-American, Hispanic-American, and female subgroups of non-college attending high school graduates. The fourth follow-up of the 1980 sophomore cohort from HS&B was used in this examination.

The results of this research suggest that non-college attending youth, who take vocational education in high school with the expectation of improving their post secondary labor market outcomes, are not likely to experience any long term benefit. In fact, it did not appear to matter whether non-college attending youth took more academic courses or more vocational courses in high school; long term these young people, generally, had less continuous labor force participation and reported low annual incomes. Surprisingly, linking secondary vocational education participation with early work experiences gained via Co-op

had no effect on the labor market experiences of non-college attending high school graduates ten years after high school.

This research helped illuminate the unanswered question concerning the long-term economic effects of secondary vocational education for non-college attending youth; however the results reported here should be interpreted with caution. First, path analysis, while offering a powerful method for the analysis of nonexperimental data, is a large sample (i.e., N of at least 300) procedure and the reported results for females, African-Americans, and Hispanic-Americans were all based on small samples.

Second, these results may not generalize to non-college attending youth who graduated in the late 1980s. Secondary vocational education curriculum has recently bolstered its academic component and these changes are not reflected in the data collected on non-college attending youth who graduated over a decade ago. In fact, in a recent survey completed by the Virginia Department of Education (1995) it was found that 41% of high school students in Virginia completed a vocational program while in high school and that 58.3% of 1993-94 high school graduates reported that they were continuing their education.

Finally, while the results of the Virginia study are promising in terms of how many young people are electing to continue their education once they graduate high school, on average young people who do not continue their education do poorly in the labor market over the long term. This finding was consistent, regardless of high school curriculum.

APPENDIX

SECONDARY SCHOOL TAXONOMY¹

All secondary curriculum variables used in this study were organized using the taxonomic hierarchies reported by NCES (1992). This taxonomy divides secondary curriculum into three parts: academic, vocational, and personal/other.

The academic curriculum is further aggregated into six main subject areas: mathematics, science, English, social studies, fine arts, and foreign language.

The secondary vocational curriculum is subdivided into three curriculum areas: consumer & homemaking education, general labor market preparation, and specific labor market preparation.

The personal/other curriculum is divided into general skills, personal health & physical education, religion, and military science.

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Footnote

¹For a complete description of the secondary school taxonomy, see Anoinette G. Gifford, E. Gareth Hoachlander, and John E. Tuma, The Secondary Taxonomy Final Report, a report prepared for the National Assessment of Vocational Education, Office of Planning, Budget, and Evaluation, U.S. Department of Education (Berkley: MPR Associates, February, 1989).

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RESPONSIBILITIES:

- Undergraduate courses taught to date: General Psychology; Development II: Adults; Behavior Modification; General Psychology Honors.
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1/90 - 12/91

ADULT TRANSITION COORDINATOR

South Carolina University Affiliated Program
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RESPONSIBILITIES

- Participated in interdisciplinary team meetings focusing on services for adults with developmental disabilities.
- Serve as Project Coordinator on grants that relate to adult transition issues. (See Grant Projects section.)

5/85 - 9/87

STUDENT SERVICES SPECIALIST

Charlotte-Mecklenburg Schools
Charlotte, NC

RESPONSIBILITIES:

- Consolidated position of school psychologist, social worker, and guidance counselor in an elementary school.
- Performed all psychological assessments, individual and small group counseling, and classroom guidance lessons.
- Developed and implemented schoolwide plan for: (1) Minority Achievement Program; (2) Drop-out Prevention Program; (3) Suicide Prevention, and (4) Comprehensive Student Services Program.
- Provided inservice training to teachers and workshops for parents.
- Maintained Student Services and Exceptional Children files.
- Chairperson for School Base Committee and Assistance Team, which review all referrals for exceptional children's services.
- Consulted with administration, teachers and community agencies.

8/83 - 5/85

GRADUATE INTERNSHIP

Charlotte-Mecklenburg Schools
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RESPONSIBILITIES:

- Completed a 1200 hour internship in School Psychology. Worked 20 hours per week for four academic semesters providing psychological services to elementary, middle and high school students. These services included assessment, behavior management, counseling, consultation with school personnel and community agencies, as well as other duties assigned by field and faculty supervisors.

9/80 - 2/83

SUPERVISOR TEACHER--PARENT II

Mecklenburg Autistic Group Homes, Inc.
Charlotte, NC

RESPONSIBILITIES:

- Supervised direct care staff and 5 clients.
- Supervised volunteers and students working with the agency.
- Worked with the Program Coordinator in overseeing implementation of all programs.
- Coordinated staff training and scheduling.
- Worked with outside consultants in developing and implementing special programs.
- Worked with Director and Program Coordinator

in revising policies and procedures to meet federal guidelines for an ICF-MR facility.

CONTRACTUAL SERVICES:

1989 - present **Fort Mill School District**
Fort Mill, SC

Services Provided:

- Conduct evaluations for grades K - 12 as needed by district.
- Conduct all multi-district placement re evaluations for TMH/PMH and pre-school students.

1993 - present **Headstart of York County**
Rock Hill, SC

Services Provided:

- Consult with Program Director and teachers concerning behavior management and transition issues for preschool children with disabilities.
- Conduct Inservice training for teacher and staff on topics relevant to serving preschool populations.

3/90 - 12/90 **York County Special Housing**
Rock Hill, SC

Services Provided:

- Psychological consultant for 2 ICF/MR supervised living facilities for mentally retarded adults.
- Provided staff training in behavior management; developed/monitored behavior management plans for clients; individual counseling to clients; participated in annual review of habitation plans for clients.

GRANT PROJECTS:

5/90 - 12/91 **Project Coordinator - SCUAP/ Winthrop College**

Title: Training Personnel to Develop Transition Teams Project
Funded: South Carolina Developmental Disabilities Council
Project Focus:
Provide training for local transition teams to assist persons with developmental disabilities for employment options and community integration. (Summary report available.)

8/89 - 11/90 **Project Coordinator - SCUAP/Winthrop College**

Title: Benefit - Cost Evaluation Project

Funded: South Carolina Developmental
Disabilities Council

Research Focus:

Descriptive analyses of the current
vocational and residential options available
to persons with developmental disabilities
and examines the extent to which persons are
served by alternative community-based
programs.

CERTIFICATIONS:

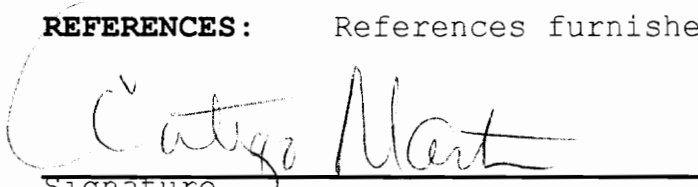
Nationally Certified School Psychologist,
since 1988

School Psychology Level II, since 1985
North Carolina and South Carolina

School Counselor, since 1985
North Carolina and South Carolina

REFERENCES:

References furnished upon request.


Signature